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Refuse and the 'Risk Society': The Political Ecology of Risk in Inter-war Britain

Timothy Cooper* and Sarah Bulmer

Summary. This article responds to current critiques of Ulrich Beck's 'risk society' thesis by historians of science and medicine. Those who have engaged with the concept of risk society have been content to accept the fundamental categories of Beck's analysis. In contrast, we argue that Beck's risk society thesis underplays two key themes. First, the role of capitalist social relations as the driver of technological change and the transformation of everyday life; and second, the ways in which hegemonic discourses of risk can be appropriated and transformed by counter-hegemonic forces. In place of 'risk society', we propose an approach based upon a 'political ecology of risk', which emphasises the social relations that are fundamental to the everyday politics of environmental health.

Keywords: risk; political ecology; waste; environment; medicine

Introduction

Scholars interested in the relations between environmental change and the histories of science, medicine and health have been attracted to Ulrich Beck's idea of the 'risk society' as a way of understanding the emergence of concerns with environment, pollution and health.[1] Some of this attention has been quite critical; particularly regarding the chronology Beck applies to the emergence of 'reflexivity' within risk society. For instance, David F. Smith has critically reassessed the formation of risk society in the context of the Aberdeen typhoid outbreak of 1964, and has suggested that there are difficulties with the idea that the risk society presents a distinctive historical conjuncture.[2] Jean-Baptiste Fressoz has pointed to the presence of concerns about environmental catastrophe and the regulation of scientific progress in mid-nineteenth century France.[3] Such critical engagements only go so far however, and in some respects fail to hit their mark. For

*Department of History, College of Humanities, University of Exeter, Cornwall Campus, Penryn, Cornwall, TR10 9EZ. E-mail: t.cooper@exeter.ac.uk

Dr Timothy Cooper is Senior Lecturer in History at the University of Exeter's Cornwall Campus and has research interests in labour history and environmental history. His recent research has concentrated on the political ecology and ideology of waste.

Dr Sarah Bulmer is Lecturer in Politics at the University of Exeter's Cornwall Campus. Her research interests include critical environmental politics and gender politics in the British armed forces.

[1] Greg Mitman, Michelle Murphy and Christopher Sellers, 'Introduction: A Cloud over History', *Osiris*, 2004, *19*, 1–17, 14–16.

[2] David F. Smith, 'Food Panics in History: Corned Beef, Typhoid and "Risk Society"', *Journal of Epidemiology and Community Health*, 2007, *61*, 566–70.

[3] Jean-Baptiste Fressoz, 'Beck Back in the Nineteenth Century: Towards a Genealogy of Risk Society', *History and Technology*, 2007, *23*, 333–50; Jean-Baptiste Fressoz, 'The Gas Lighting Controversy: Technological Risk, Expertise and Regulation in Nineteenth-Century Paris and London, *Urban History*, 2007, *33*, 729–55. See also the more recent contribution on environmental reflexivity which develops these arguments further: Fabien Locher and Jean-Baptiste Fressoz, 'Modernity's Frail Climate: A Climate History of Environmental Reflexivity', *Critical Inquiry*, 2012, *38*, 579–98.

instance, Beck recognises that risk *in itself* has indeed been a universal characteristic of modernity.[4] For Beck it is not merely the production of risk as a response to technological change which is the key to *risk society*. Rather, risk society forms a distinct historical epoch because of two new characteristics that have emerged from within the social relations of risk: the *individuation* of risks within society in general, and the monopolisation of the right to determine acceptable risk by scientific experts. Any critical engagement with risk also needs to engage with these specific categories of analysis.

In his book, *Risk Society: Towards a New Modernity*, Ulrich Beck proposes that the post-war period has seen a movement from a classically modern period of 'industrial modernisation', based on the positive production of social 'goods', toward an era of 'reflexive modernisation', in which governments increasingly seek to assess and mitigate the negative consequences of industrial and technological transformation.[5] Risk society, Beck argues, emerges from the tripartite interaction of the productive forces, scientific knowledge, and governance:

> Risks presume industrial, that is, techno-economic decisions and considerations of utility. They differ from 'war damage' by their 'normal birth', or more precisely, their 'peaceful origins' in the centres of rationality and prosperity with the blessings of the guardians of law and order. They differ from pre-industrial natural disasters by their origins in decision-making, which is of course never conducted by individuals but by entire organisations and political groups.[6]

At the heart of this conception of the risk society is a normative critique of late-modernity.[7] Beck claims that the changing power relations that result from the emergence of risk society constitute a challenge to traditional notions of democratic citizenship. In contrast to the social risks of high modernity (disease, unemployment), techno-scientific risks are individuated; artificially produced chemical toxins, for example, attack an individual body based upon the partly unpredictable characteristics of place and materiality, as much as social class or national population. Risks are 'somehow universal and unspecific'.[8] Within the post-industrial order, however, the significance of particular hazards are identified and measured by specialist knowledge producers who determine both what is an acceptable risk and the technical modes of measuring and mitigating hazards.[9] Beck is critical of what he terms the 'technological moralisation' of the decision-making processes, that is, the removal of risk from democratic (i.e. properly political) decision-making processes through the application of techniques of control.[10] The risk society is, from this point of view, pre-eminently a *political* structure, and the risk society concept is, therefore, a political critique that posits a late-modernity that is part of a post-political order of technological decision-making.

The risk society thesis, as propounded by Beck, provides us with a powerful sociological tool for the critique of modern techno-scientific societies. It should be read alongside

[4]Ulrich Beck, *Risk Society: Towards a New Modernity* (London: Sage, 1992) 51.
[5]Beck, *Risk Society*; Ulrich Beck 'From Industrial Society to the Risk Society: Questions of Survival, Social Structure and Ecological Enlightenment', *Theory, Culture and Society*, 1992, 9, 97–123.
[6]Beck, 'Industrial Society', 98.
[7]Beck, *Risk Society*, 19.
[8]*Ibid*, 53.
[9]*Ibid*, 51–84.
[10]Beck, 'Industrial Society', 99.

other such critiques such as Foucault's influential investigations of the disciplinary worlds of 'biopolitics' and 'governmentality'.[11] There are also parallels with Latour's investigation of networks of scientific knowledge production and socialisation in Beck's emphasis on the relations between scientific knowledge production and the normalisation of risk production through forms of political organisation.[12] Historians have not, however, directed much specific critical attention to the conceptual apparatus upon which Beck's claims rest. There are solid empirical grounds for such a critique. Here, we focus on two categories in particular, which we wish to put to the test in a concrete historical context.

The first category is the concept of 'individuation'. In his analysis Beck makes a number of assumptions about the nature of the material interactions between technologies and humans. Individuation is rooted for Beck in the changing dynamics of labour exploitation in post-industrial societies, as the collective experiences of class in the workplace are undermined.[13] Beck argues that the unforeseen effects of technological decisions (pollutants, toxins, radioactivity) individuate risk in the relation of the human body to the environment: 'Objectively, however, risks display an equalising effect within their scope and among those affected by them. It is precisely therein that their novel political power resides'.[14] Reducing this to a formula, Beck continues, 'poverty is hierarchic, smog is democratic', that is, the materiality of exposure to risk is no longer confined to class but becomes generalised.[15] He concludes that the risk society moves 'beyond status and class', although it does not replace them.[16]

What this perspective arguably omits, however, is sufficient reflection on the socio-spatial dynamics of technological change and their historical specificity, themes that have been of particular interest to both environmental justice activists and critical geographers.[17] Beck's argument tends to focus on changes in the productive forces (technologies) and relations of production rather than the wider social relations of production that are revealed in the form of those technologies at the level of everyday life. It is by this method that he reduces Marxist analysis to the analysis of class collectivities in the workplace. However, the social relations of capitalism cannot be reduced to class relations because they also involve wider structural inequalities that emerge from the requirement to reproduce, circulate, and consume value on a daily basis.[18] This is the sphere of 'everyday life' that has been expanded upon by Henri Lefebvre among others.[19] In what follows,

[11] Although it is arguably differentiated by its emphasis on materiality and the agency of matter in the production of risk, a subject that has recently been expanded upon by the 'new-materialisms'. See Jane Bennett, *Vibrant Matter: A Political Ecology of Things*, (Durham, NC: Duke University Press, 2010); Diana H. Coole and Samantha Frost (eds), *The New Materialisms* (Durham, NC: Duke University Press, 2010).

[12] Bruno Latour, *The Pasteurisation of France*, Alan Sheridan and John Law (trans), (Cambridge, MA: Harvard University Press, 1993 edn.)

[13] Beck, *Risk Society*, 88.

[14] *Ibid*, 35.

[15] *Ibid*.

[16] *Ibid.*, 99–101.

[17] Michael K. Heiman, 'Race, Waste and Class: New Perspectives on Environmental Justice', *Antipode*, 1996, *28*, 111–21; Risa Whitson, 'Negotiating Place and Value: Geographies of Waste and Scavenging in Buenos Aires', *Antipode*, 2011, *43*, 1404–33; Michelle Yates, 'The Human-As-Waste, the Labor Theory of Value and Disposability in Contemporary Capitalism', *Antipode*, 2011, *43*, 1679–95.

[18] Christopher Sellers and Joseph Melling, 'Towards a transnational industrial-hazard history: charting the circulation of workplace dangers and expertise', *British Journal for the History of Science*, 2012, *45*, 401–24.

[19] Henri Lefebvre, *Critique of Everyday Live: Foundations for a Sociology of the Everyday*, 3 vols (1947, 1962, 1981), II. Alex Loftus, *Everyday*

we seek to demonstrate how the risk society thesis might be enriched by taking into account everyday life.

The second key category of analysis is that of the role of knowledge in the production of risk, and the monopoly power this gives to scientists in determining acceptable risk.[20] Beck argues that increasingly science operates reflexively, as the limits of scientific knowledge assert themselves through the emergence of previously unknown risks that challenge claims that particular techniques are safe. Science thus works to delegitimise itself, or, as Beck articulates it, science 'has become *in*dispensable to *and in*capabale of truth'.[21] This account of the reflexivity of scientific knowledge is central to Beck's account of risk society, as well as to his more hopeful claims for the possible emergence of a public sphere more attuned to ambiguity, unknowability and the critique of values. While, in so far as risks represent the consequences of industrial, techno-scientific choices, this may seem reasonable, it nonetheless implies that risk society rests primarily upon the immanent contradictions of scientific knowledge production. This 'idealism' is in tension with the more materialist aspects of Beck's account, and Beck does not account for the ways in which the choice of technologies can themselves 'reveal', as Marx puts it, 'the active relation of man to nature, the direct process of the production of his life, and thereby it also lays bare the process of the production of the social relations of his life'.[22] We shall attempt to partly fill this gap, by suggesting that an analysis which places scientific discourse within a wider 'semantic field' of the everyday, can throw light on the tensions, contestations and failures of scientific knowledge production.

Historians who have engaged with the risk society have yet to respond to the political consequences of Beck's account of risk society. This has important implications because if we assume that technologies and their associated risks reveal social relations, then we might also reasonably ask whether Beck's account may hide a much more contested and multi-faceted understanding of the composition and decomposition of scientific understanding in particular historical contexts. An emphasis on the social relations within which risk emerges should also enable a renewed critique of Beck's normative political assumptions. Central to Beck's political agenda is the claim that the monopolisation of the right to decide upon acceptable risk is in conflict with the norms of democratic citizenship and the requirements of an open public discourse. His argument rests upon the idea that the legitimacy of scientific expertise in post-industrial societies allows experts to claim authority over competing truth claims. Historians have an important contribution to make by testing the accuracy of this claim by paying attention to the competing claims around risk and health in particular historical contexts.

In this article we seek to engage directly with these normative social and political claims in the context of the inter-war refuse crisis in Britain. We do not ask when risk society emerged, but rather whether the concept itself is adequate to the task of understanding what is at stake in *political* struggles over techno-scientific risks. We choose to approach those struggles as hegemonic struggles embedded in social relations of a kind to which we

Environmentalism: Creating an Urban Political Ecology (Minneapolis, MN and London: University of Minnesota Press, 2012).

[20]Beck, *Risk Society*, 26.

[21]Beck, *Risk Society*, 166.

[22]Karl Marx, *Capital: A Critique of Political Economy: Volume one*, Ben Fowkes (trans), (London: Penguin, 1976 edn.), 493.

believe Beck fails to give sufficient weight. We see the politics of risk as embodying not merely the political *consequences* of industrial or technological change, but also struggle over social power more widely, including conflict with the capitalist mode of production and its effects on the sphere of everyday life. We pay particular attention to the material and spatial elements in this process as determining forces in shaping the discourse of risk. Furthermore, rather than privileging the production and contestation of scientific knowledge in itself, we attempt to put the operation of that knowledge into the context of the social relations of everyday life. We argue that attempts to legitimise certain technologies, rather than being seen as hegemonic discourses in isolation, were conducted on the basis of contested understandings of risk within a much wider 'semantic field' of the everyday. From within this field medical discourses of risk produced by expert knowledge were continuously rendered contradictory and threatened to fall apart. This had real effects on the forms that technological fixes to risk eventually took. Through a detailed empirical analysis of the politics of risk associated with urban refuse disposal in inter-war Britain, we seek to reconstruct the concept of the 'risk society', including its normative aspects, by integrating it with insights from Marxian political ecology to produce a 'political ecology of risk society'.[23]

Britain's Inter-war Waste Regime: The Reproduction of Urban Space

We have already indicated that it is necessary to approach the risk society thesis from an empirical point of view. We have chosen to do this through a case study of refuse disposal in early twentieth-century Britain. This is not simply an arbitrary choice. Waste is an excellent way of integrating an analysis of social relations into the analysis of risk, as it is central to the project of capitalist modernity. As John Scanlan has illustrated, the Enlightenment was itself constituted by the category of waste as the cutting away of useless knowledge, the separation of value from refuse.[24] Waste disposal has been a consistently controversial source of risk throughout industrial and late-industrial modernity.[25] Technologies of waste disposal have been opposed throughout on grounds of the risks they pose to health and environment. However, too often historians have been content to regard waste disposal as a purely technological, 'end-of-pipe' problem, isolated from its constituent role in social life. Environmental histories have emphasised the materiality of waste as an objective environmental 'problem' and the technological 'search for the ultimate sink'.[26] However, wasting is as much about the production of urban space as about the material results of consumption.[27] The daily reproduction of the city as a lived environment within which social relations can recur requires a continuous process of responding to the flow of matter through the city. The materiality of waste disposal is therefore

[23]Loftus, *Everyday Environmentalism*, 109–29.

[24]John Scanlan, *On Garbage* (London: Reaktion, 2005).

[25]Timothy Cooper, 'Modernity and the Politics of Waste in Britain', in P. Warde and S. Soerlin (eds), *Nature's End: History and the Environment* (Basingstoke: Palgrave Macmillan, 2009), 247–72.

[26]Bill Luckin, 'Pollution in the City, in M. Daunton (ed.), *Cambridge Urban History of Britain*, Vol. 3 (Cambridge: Cambridge University Press, 2000), 207–28; Martin Melosi, *The Sanitary City: Environmental Service in Urban America* (Pittsburgh, PA: Pittsburgh University Press, 2008); Joel Tarr, *The Search for the Ultimate Sink: Industrial Pollution in Historical Perspective* (Akron, OH: University of Akron Press, 1996).

[27]Neil Smith, *Uneven Development: Nature, Capital and the Production of Space* (Athens, GA: University of Georgia Press, 2008).

inherently linked to a wider process of the reproduction of social relations. Christopher Hamlin's work on public health and social justice is an excellent example of this, demonstrating that the remaking of urban environments legitimates social order and reproduces the conditions of possibility for capital accumulation.[28]

Wasting is, therefore, an act of social reproduction. As Zsusza Gille has demonstrated, our ways of wasting are themselves historically contingent on networks of discourse, technology and political economy that form particular historic 'waste regimes'.[29] Nineteenth- and twentieth-century-Britain has, arguably, seen a number of different waste regimes based on different moral economies of wasting in which understandings of the risks to human health of disposal were central in moralising particular technologies of disposal. For example, the period between 1870 and 1914, which Bill Luckin has termed the 'refuse revolution', saw the municipalisation of waste collection and disposal, and the establishment of incineration as the preferred waste disposal technology in Britain. As a form of disposal the 'dust-destructor' (or incinerator) made sense in an urban energy regime that was based largely on coal and which produced a waste stream with a high content of unburnt cinders. Incineration was, however, also embedded in a particular medical discourse of risk that made sense of it as a technology. Sanitary accounts of disease dictated destruction of refuse by fire, which eliminated putrefactive substances and smell. As John F. M. Clark has shown, it was strongly promoted by Medical Officers of Health in urban local authorities before the First World War, and enjoyed a great deal of prestige among the profession.[30] Challenges to incineration did arise from time to time among both the public and the medical profession particularly around the question of smoke pollution, so that careful ideological work had to be undertaken by Medical Officers of Health to legitimate incineration as the best way of eliminating risk from putrefactive substances. We can understand the ideal pre-1914 system as a particular 'waste regime' built upon an expert sanitary discourse of risk emerging from the presence of putrefactive substances in refuse, and whose preferred technological fix was the dust-destructor.

This waste regime was challenged by the consequences of war and post-war social and economic change. The period between the world wars was a period of both change and stability on the urban metabolism of British cities. At one level the energy regimes of cities remained founded on coal, which generated large amounts of waste cinders and ashes. There were few fundamental changes in the waste stream of the kind that would be characteristic of the classic age of post-war consumption.[31] Electrification and the introduction of the national grid were beginning to change this energy regime, and the geographical

[28]Christopher Hamlin, *Public Health and Social Justice in the Age of Chadwick* (Cambridge: Cambridge University Press, 1998); Christopher Hamlin, 'Providence and Putrefaction: Victorian Sanitarians and the Natural Theology of Health and Disease, *Victorian Studies*, 1985, *28*, 381–411. For an introduction to the relations between wasting and changing consumer habits see: Susan Strasser, *Waste and Want: A Social History of Trash* (New York: Henry Holt Books, 1999), also, Helen Rogers, *Gone Tomorrow: The Hidden Life of Garbage* (New York: The New Press, 2005).

[29]Zsuzsa Gille, *From the Cult of Waste to the Trash Heap of History: The Politics of Waste in Socialist and Post-Socialist Hungary* (Bloomington, IN: Indiana University Press, 2007).

[30]John F. M. Clark, '"The Incineration of Refuse is Beautiful". Torquay and the Introduction of Municipal Refuse Destructors', *Urban History,* 2007, *34*, 255–77.

[31]Timothy Cooper, 'War on Waste? The Politics of Waste and Recycling in Post-War Britain, 1950–1975', *Capitalism Nature Socialism*, 2009, 53–73.

distribution of its waste products, but the full effects of this would not be felt until the revolution in domestic energy use after the Clean Air Act of 1956.[32] Between 1926 and 1934, when the Ministry of Health first began collecting national statistics on refuse collection and disposal, the results showed that the average weight of refuse produced per thousand of the population remained remarkably constant.[33] The daily reproduction of urban space therefore remained predicated on the disposal of large quantities of ashes from domestic fires, on top of large quantities of other household and trade refuse.

Changes in waste disposal technologies in this period were not primarily driven by changes in the material character of the waste stream. Rather, the origins of Britain's inter-war 'waste crisis' are to be found in the combination of economic crisis and the requirements of reproducing urban space. In the period of the 'refuse revolution', municipal waste disposal machinery was largely paid for through a relatively generous Local Government Board loans scheme.[34] Although cost had always been an issue in local attitudes towards refuse disposal, in practice the question of the 'healthiest' mode of disposal was often a determining issue before 1914. Even medium-sized municipal authorities were happy to invest in expensive new refuse disposal systems, in a way they would not do after 1919, and hundreds did so in the 1890s and 1900s.[35] However, in the era of Geddes Axe 'austerity', an increasingly parsimonious central government was alarmed by, and obsessed with, the cost of refuse disposal. 'Economies' in services such as refuse collection and disposal were to the fore in the minds of government officials, and this had important implications for public health choices. Where Medical Officers of Health had driven choices about refuse disposal technologies without significant regard to cost, the post-war period was increasingly dominated by the search for forms of refuse disposal that were both cheap and risk free. For the first time in the 1920s, central government began to publish a separate statistical account of the costs of refuse disposal based on the Ministry's *Annual Report*.[36] This act of centralised data collection itself pointed towards a desire to discipline the costs of refuse collection and disposal in a way previously left to local politics. The ideology of 'economy' also increasingly determined the discursive frame in which decisions about the viability of technological choices were made. For example, relatively expensive technologies, such as dust-destructors, which had been popular before the war, now faced increasing opposition from central government.[37] This culture of 'economy' also extended a practical veto over programmatic suggestions for solving the urban refuse problem, which was most obvious in consistent failures to enact proposals for the centralisation of collection and disposal in major urban areas like London.[38]

[32]Brian Clapp, *An Environmental History of Britain* (London: Longman, 1994), 45–55.

[33]*Public Cleansing: Extracts from the Annual Report of the Ministry of Health for 1926–27* (London: HMSO, 1937), 1935.

[34]Christine Bellamy, *Administering Central-Local Relations, 1871–1919: The Local Government Board in its Fiscal and Cultural Context* (Manchester: Manchester University Press, 1988).

[35]Clark, 'Incineration', 264–5.

[36]See the series, Ministry of Health, *Public Cleansing: Extracts from the Annual Report of the Ministry of Health*. The statistical series ran from at least 1926 to 1935, and was explicitly designed to enable a comparison between different municipal authorities so as to judge (and presumably also to discipline) expenditure.

[37]Timothy Cooper, '"Burying the Refuse Revolution": The Rise of Controlled Tipping in Britain, 1920–1960', *Environment and Planning A*, 2010, *42*, 1033–48.

[38]Mathew Gandy, *Recycling and Waste: An Exploration of Contemporary Environmental Policy* (Aldershot: Ashgate Publishing, 1993), 72–7.

Concerns with the risk of waste disposal to public health increasingly had to accommodate themselves to the discourse of economy in this period. Nowhere is this more apparent than in the debate over the tipping of refuse. Incineration had been predicated on the idea that any tipping of putrefactive refuse was a negation of health and a significant risk to public well-being. In the inter-war era, tipping was looked to as the necessary cheap alternative to incineration. Some of the contradictions that arose from this are nicely illustrated by the arguments made at a Ministry of Health conference on the subject in 1922. The conference had been called to discuss the problem of crude tipping of refuse on the suburban fringes of London. Alderman Dawson of Camberwell Metropolitan Borough, himself a proponent of a centralised scheme of refuse disposal for London, argued that a metropolitan waste disposal system should be founded on public health priorities not considerations of cost. A centralised system of waste collection and disposal should 'remove the whole to some place where it would not be offensive to anyone, but would be destroyed [incinerated] and save the health of the people'.[39] Dawson attacked salvage (recycling) and tipping systems of the kind that had emerged during the First World War as unhealthy, and demanded centralised disposal by incineration:

> I value my health more than I do 2d on any rate. I think we ought to do it and I think it would go down to the credit of London that we have removed the last source of that which was going to blast the health of the people. I am proud of the fact that London is the healthiest city in the world, and I want to keep it so. We shall never do it by seeing how we can save on refuse; that will never do.[40]

Dawson's call for centralised waste collection and disposal based on incineration technology was, however, firmly rejected. The Ministry's representative at the meeting, Mr. Gibbon, accepted that incineration may have had 'its uses within certain well-defined limits', but based on wartime experiments with new methods of tipping, 'experience shows that, with proper management, the tip can be rendered, not exactly an object of beauty or desire, but relatively harmless; in fact, I was told the other day of one place where on a tip actually now in use they did not breed a plague of rats, but rabbits.'[41] Representing the urban borough of St Marylebone, Alderman Watson questioned whether urban incineration was not itself a hazard: 'Borough Councils are left with 2 recourses, either to send the refuse into the country, which of course is the method of least resistance, or else to destroy it in destructors. We know that it is very difficult to attempt to consume or destroy house refuse in any crowded locality. It is not only difficult but insanitary and expensive'.[42]

However, tipping refuse on the urban fringes faced some very severe challenges. In part this was due to the spatial transformation of urban areas. Suburban building was rapidly transforming Britain's cities, and the dispersal of working-class urban populations to the, supposedly healthful, suburbs threw up new difficulties of waste disposal.[43] London presented particular difficulties. By 1924, the combined metropolitan boroughs were sending some 500,000 tons of house and trade refuse annually to dumping grounds in Essex and

[39]The National Archives (TNA), HLG 51/11 London Refuse Proceedings of a Conference, 29 June 1922.
[40]*Ibid*.
[41]TNA HLG 51/11 London Refuse Proceedings of a Conference, 29 June 1922.
[42]*Ibid*.
[43]John Davis, 'Modern London', in P. J. Waller (ed.), *The English Urban Landscape* (Oxford: Oxford University Press, 2000), 125–50.

other extra-mural counties.[44] Before the First World War these so-called 'crude dumps' had been sited far enough from significant urban development that they could at least be ignored, if not officially sanctioned. Post-war suburbanisation changed this, increasingly bringing the residents of new suburban housing estates into close proximity with such dumping grounds. One consequence of this was that refuse disposal became much more hotly contested. Uncontrolled tipping emerged as a concern in the national press. The Ministry of Health received regular communication from both local government and individuals. Fears surrounding the impact of exposure to dump sites on public health, largely built upon the putrefactive discourse of sanitary medicine, were central.

The politicisation of waste disposal in this period, therefore arose partly out of changes in the spatial structure of urban areas, driven by the wider requirements of urban reproduction. The transformation of the debate around Britain's waste disposal system in this period was driven not by a process of 'individuation' of the kind that Beck identifies, but by the antinomies arising from the demands of reproducing urban space and the medical and ecological impact of the technologies that were designed to enable this. One particularly notorious example of these processes was presented by the Essex riverside tips. The London County Council's showpiece estate at Becontree, an estate built with the express purpose of improving working-class living standards and health, was being constructed just north of Britain's largest and most notorious crude refuse tip at South Hornchurch.[45] In 1924 the London County Council wrote to the Ministry of Health complaining of the proximity of these dumps to the estate. Their letter observed tartly that in such a context, 'the question of the continuance of the present method of disposal of house refuse is one which assumes a position of very great importance'.[46] A subsequent investigation, undertaken in 1925 by the Ministry of Health's Director of Public Cleansing, Jesse Cooper Dawes, reported that:

> This was my first visit to these dumps and I was rather surprised to find the conditions so bad, especially at the City dump (Cory's Lighterage Co. Ltd.). No attempt whatever is made to 'manage' either of them; long deep tipping faces are exposed; no part of the refuse is covered either on the slopes or surface; no leveling is done; fire is not taken note of (on the City dump), there is ample evidence of a huge rat population, and if the conditions I saw are those usually found in the warmer weather I can quite believe that the whole neighbourhood is fly infested.[47]

It was not just a single dump that presented a problem. In 1920, Romford Urban District Council received two separate letters of complaint about the dumping of refuse from St Pancras on a disused brickfield in the area.[48] Large quantities of refuse were being brought by rail, it stated, and the local Medical Officer of Health claimed that a great nuisance was likely to arise as a result.[49] Not much appears to have changed by 1924, when the council again asked its Medical Officer of Health to investigate as the dumps 'were a

[44]TNA, HLG 51/12, J. C. Dawes, Report on London Refuse for Ministry of Health, London Refuse Dumping on London Bank of Thames.

[45]Andrej Olechnowicz, *Working-class Housing Between the Wars: the Becontree Estate*, (Oxford: Oxford University Press, 1997).

[46]TNA HLG 51/12 London Refuse Dumping, Letter from LCC to Ministry of Health 'Disposal of Refuse', 5 July 1924.

[47]TNA HLG 51/12, J. C. Dawes Report of Visit to Refuse Dumps of Rainham, 26 February 1925.

[48]*Romford Times*, April 21 1920, p. 2.

[49]*Ibid*.

great nuisance and were going to become a further nuisance'.[50] Unregulated dumping on private land throughout the eastern suburban fringes of London adjoining the Thames was one of the main sources of discontent and public fear about the consequences to health of exposure to urban waste. It was around this question that ideas about a technological fix to dumping as a practice emerged and were contested. In the long-term these debates would see the emergence of controlled tipping (sanitary landfill) as the dominant technological form of an urban waste regime that would ultimately endure through the rest of the twentieth century.

Waste Disposal and Environmental Justice

As Richard Rodger and Genevieve Massard-Guilbaud have recently argued, cities are a site where social and environmental justice issues often meet.[51] One might add that the urban fringe is commonly an important space in which such issues manifest themselves. A key question that arose from the politics of tipping was the justice of the export of metropolitan refuse and its associated risks to the suburbs. The absence of statutory rights for local authorities in controlling the use of land in their areas was a particular source of tensions. Tottenham Parliamentary Borough declared that it was 'extraordinary that no statute exists to prevent private ground being made use of for the deposit of refuse to the serious distraction of the amenity that occupiers of neighbouring premises are subjected to and the deterioration in value that owners have to tolerate', added to which was the 'menace to health' which had 'resulted both from an invasion of the property by rats and flies'.[52] The contradiction of trying to promote local health while being a site for dumping urban refuse motivated Hayes Urban District Council when it passed a resolution complaining that: 'Whilst endeavouring to assist the Ministry in raising the standard of health of the inhabitants, the Council find themselves thwarted by mountains of London filth being dumped in the district by Contractors who undertake to keep London Boroughs clear'.[53] The spatial injustice of this prompted some like the Medical Officer of Orsett Rural District to argue that urban authorities should be compelled to erect dust destructors to deal with their own waste *in situ*.[54] In October 1929, a joint conference of those suburban district councils affected was called by Essex County Council (ECC).[55] The county Medical Officer of Health, who had been instructed to re-examine the Essex riverside dumps, reported that they were undoubtedly a menace to health. The Chairman of the ECC expressed his anger that his county was suffering the consequences of metropolitan failure:

> [T]his is an outrageous scandal which has been created by the metropolitan boroughs of London in dumping millions of tons of household refuse on the north shores of the Thames, there to become an intolerable nuisance. The position from our point of view

[50] *Romford Times*, August 13 1924, p. 1.

[51] Richard Rodger and Geneviève Massard-Guilbaud 'Reconsidering Justice in Past Cities: When Environmental and Social Dimensions Meet', in R. Rodger and G. Massard-Guilbaud (eds), *Reconsidering Justice in Past Cities: When Environmental and Social Dimensions Meet: Historical Perspectives* (Cambridge: White Horse Press, 2011), 1–42.

[52] TNA HLG 51/11, Letter from Parliamentary Borough of Tottenham to Ministry of Health, 22 June 1922.

[53] TNA HLG 51/12, Letter from Hayes UDC to Ministry of Health, 24 September 1924.

[54] *Romford Times*, 5 January 1927, p. 2 'Refuse Dumps Nuisance'.

[55] *Romford Times*, 2 October 1929, p. 3 'Refuse Dump "Scandal"'.

> has become extremely serious. London is dumping over 100,000 tons of refuse on the north shore of the Thames yearly. One of the dumps is already 90ft high. It has been accumulating over a large number of years, and is the curse of the village of Rainham.

The conference agreed a resolution demanding legislation that would in effect have enabled local authorities to exercise a veto power over the use of private land as dumping ground.[56]

The question of environmental justice and the establishment of a local veto over dumping moved the antinomies of waste disposal into the realm of outright spatial contradictions. It also further illustrates the limits of 'individuation' in understanding the politics of risk in this period. The injustices of dumping were conceptualised in terms of spatial communities of risk and responsibility. Within localities the acceptability of risk was often determined by local officials, whose status and legitimacy arose from their claims to protect the health of particular places and spaces. The key point, however, is that the demands of suburban areas for a right to veto sites for dumping by metropolitan authorities could not be met without creating a crisis of waste disposal (and of urban reproduction) for the metropolis. The consistent rejection of such powers by central government throughout the inter-war period demonstrated the latent priority given to the reproduction of metropolitan space, and exposed the limits to the priority accorded to public health. The Departmental Committee on London Cleansing firmly rejected local veto powers, for example, advising the creation of a centralised waste collection and disposal authority for the entire metropolis as an alternative.

However, proposals for centralisation themselves met with fierce resistance from Metropolitan Boroughs who were viscerally opposed to centralisation, a position which reflected long-standing antagonism between the boroughs and the London County Council.[57] Lambeth Borough told the Ministry of Health that any centralisation was 'inadvisable and impractical'.[58] The City of Westminster dismissed the idea of either centralised waste collection or an LCC rate for the costs of disposal.[59] These spatial conflicts between suburban districts and central urban areas also revealed social conflicts of class. Responding to the failure to obtain local veto the Labour MP for Romford, H. T. Muggeridge, pointed angrily to the great danger to the health presented by dumps to working-class suburban communities.[60] In January, during discussion of the Rural Amenities Bill, he had attacked the metropolitan boroughs in class terms:

> The offenders were the City of Westminster and the City of London and Kensington. The very places which looked with horror upon Poplar were the places that offended, and rather than spend money on the means of getting rid innocuously of the stuff,

[56]TNA HLG 51/8, *Public Cleansing (London)*. The councils formed the Essex Riverside Advisory Committee, composed of some 17 authorities, to pursue this objective.

[57]TNA HLG 51/8, *Public Cleansing (London)*.

[58]TNA HLG 51/8, *Public Cleansing (London)*, Letter from MB Lambeth, 13 October 1930.

[59]TNA HLG 51/8, *Public Cleansing (London)*, Letter from City Westminster, 17 October 1930.

[60]TNA HLG 51/8, *Public Cleansing (London)*, Letter from parliamentary committee.

> which was a danger to health, not in their own neighbourhood but in the neighbourhood of his constituents, they would barter to get rid of it in this way.[61]

Legislation was, he suggested, necessary to equalise the power of smaller local authorities to challenge the rich, powerful Metropolitan Boroughs and their contractors to conduct what he called a 'premeditated uglification', which undermined the original reasons for the construction of 'these would-be model cottages of the working classes' at Becontree.[62] Dartford Rural District Council wrote to the Ministry furious with the failure of the Departmental Committee to deliver 'any concrete and constructive proposal to deal with the indiscriminate dumping of London refuse'.[63] The contradictions of urban refuse disposal and the needs of everyday reproduction of the city thus reveal the spatial, social and environmental justice issues that are at work behind the politics of risk. We should not to assume that because perceptions of risks to health are sometimes sensed through, or articulated in the context of the individual body, they do not also reveal the operation of the social relations of the everyday. It is within the field of everyday life that risk can best be placed in order to understand more fully the context within which it operates and the contradictions that emerge from efforts to stabilise the discourse of risk.

Risk and Everyday Life

How can we understand the relations between the expert production of knowledge of risk and the everyday world of social relations within which it was embedded? To what extent is Beck's picture of expert monopolisation of the right to decide acceptable risk adequate? There is a complex problem here of the relative importance to be accorded to scientific knowledge production and the respective roles of citizens and workers in responding to and, on occasion, contesting that knowledge. Whereas Beck tends to view scientific knowledge production as an immanent process of self-critique (by which scientific expertise produces public doubt and unpredictability with respect to its own foundations) we wish to read risk discourse within the wider 'semantic field' of everyday life.

Here we follow to some extent Henri Lefebvre's account of the semantic field of everyday life in his second volume of *The Critique of Everyday Life*.[64] For Lefebvre the idea of the semantic field represented an attempt to express the limits of language and signification, the idea that the study of discourse or signification, in itself, was insufficient in order to capture the totality of relations embedded in the everyday. Lefebvre saw language as what he termed a 'mediation' and therefore insufficient in itself as an explanation of everyday experience.[65] It is this relational, mediating character to language which exemplifies the very concept of the everyday.

Similarly, we wish to read risk not just as a problem of language, discourse, or knowledge production, but in Lefebvrean terms as a 'mediating' language embedded in a particular space and an ensemble of social practices whose day-to-day reproduction was

[61] *Romford Times*, 26 February 1930.
[62] *Ibid*.
[63] TNA HLG 51/8 *Public Cleansing (London)*, letter from RDC Dartford, 7 November 1930.
[64] Lefebvre, *Critique of Everyday Life*, II, 276–8.
[65] Ibid. 277.

already dependent upon certain pre-existing social relations and material processes. We believe that Lefebvre's account of the 'everyday' and of the semantic field offers a powerful means by which to express the relationality between discourses, space and the social. We are attracted to it precisely because it is attentive to the totality of relations, practices and materialities involved in a politics of risk, rather than falling back into a prioritisation of discourse over other forces. From within the semantic field of the everyday, the synthesis and appropriation of medical discourses should be seen as normal, in which the material practices and social relations of everyday life opens up antinomies, spaces for the contestation of expertise. Viewing risk as one discourse within a wider semantic field, embedded in space and the social relations of everyday life, enables us to see a more complex political ecology at work in risk society than is present in Beck's narrative of scientific knowledge production.

In the case of tipping, by the 1920s the discursive production of hazard already relied on a complex inter-textual combination of elements from public sanitary science, laboratory-based bacteriology and popular conceptions of hazard. A complaint made by the London County Council to the Ministry of Health in 1924 regarding tipping in the vicinity of the Becontree estate is typical of the generic features of risk deployed against tipping as a practice:

> Tips of the kind indicated [crude tips] give rise to offensive smells due not only to the foul character of the deposits, but also to the combustion or partial combustion of the heaps with the accompanying destructive distillation of animal and vegetable matter. The danger to health from dust blown from these heaps in dry windy weather and also from breeding of flies is also one which cannot but be viewed with some apprehension as the population of the vicinity grows. Moreover, the presence of rats, which find in the heaps an abundant food supply, as well as the pollution of ditches and watercourses are matters which should be borne in mind.[66]

This exemplifies four legitimate risks: the danger from dust; the nuisance caused by smells and 'complaints of sickness due to this cause'; the fly danger; and the 'potential danger' presented by rats.[67] Together they form the network of concerns and fears that might *prima facie* constitute elements of the risk society in practice. We shall investigate to what extent this should be taken to be the case later in this article.

The first legitimate risk, 'offensive smells', is claimed to arise from both from putrefactive processes and from the spontaneous combustion of refuse heaps. This suggests the continuing influence of sanitary accounts of disease, which had been a major component

[66]TNA HLG 51/12, *London Refuse Dumping*, Letter from LCC to MH 'Disposal of Refuse'. See also the reporting of the LCC's intervention in the *Romford Times* Wednesday 9 July 1924.

[67]Of course, the history of nuisance is a longer one that has precedents well into the nineteenth century and before. However, our point here is that it is precisely necessary to account for the role played by nuisance in this historical context if the categorical points made by Beck about risk society are to be sustained. It is not sufficient (as we pointed out above) to note that nuisance has a longer history and to equate that with the emergence of risk. If nuisance does not sit in the context of individuated social relations then it cannot, according to Beck's account, be regarded as indicative of the existence of risk society as a distinct historical epoch.

in arguments for incineration before 1914.[68] Exposure to the noxious smells of putrefactive substances was almost invariably the main risk associated with tipping, in both popular and official responses. Complaining about the nearby Dagenham refuse dumps, Rainham Council officers argued that 'the smells had something to do with the infectious diseases in the village.'[69] Sanitary knowledge continued to frame the hazards of refuse disposal, even in the context of the growing influence of bacteriology. Sometimes this was seen in implicit associations of particular events and the environmental impact of dumping. For example, it was noted in the *Romford Times* that T. H. Hughes of Dagenham, who 'understood that there had recently been two deaths from diphtheria', was careful to add that 'he did not say that the smells were the cause of this, but it did not help matters.'[70] The continuing centrality of smell in accounts of the risks of tipping points to the materiality of such discourse, embedded in everyday physical and affective experiences of the environment such as disgust. This warns us against a reduction of 'risk' to an immanent development of medical discourse that fails to interrogate its wider social meaning.

The second concern expressed above combined dust and flies as vectors of disease and illustrates the influence of a bacteriological theory of disease. We do not wish to reopen the discussion on the character or chronology of the 'Bacteriological Revolution' here.[71] We do, however, wish to point to the complex, inter-textual ways in which bacteriology was employed in the public debate on waste disposal. For example, bacteriological accounts of disease were certainly an increasingly important component of understandings of the risks associated with dumping between the wars. In *Bugs and the Victorians*, John Clark has observed how 'in the first two decades of the twentieth century, the house fly came to embody fears for the mental, moral and physical well-being of nations that were intent on populating robust empires'.[72] Secular rationalism, Clark argues, influenced by bacteriology, placed great emphasis on the fly as vector for germs and an ecological connection between centres of population and their wastes that needed to be managed, or preferably exterminated.[73] Bacteriology also highlighted the spatiality of risk. 'Through the agency of the fly', Clark writes, 'rubbish—the fundament of modernity—was revisited upon humanity. The fly traversed boundaries: it transported human refuse, which had been deposited on rural 'wasteland', back to village homes'.[74] After 1914, it was no longer a few village homes that were under threat, but the very suburban housing projects designed to address public health problems of the modern city. Together, the fly and the dump presented contradictions that urgently required resolution if they were not to undermine the progressive claims of suburbanisation. Similarly, the rat

[68] Anne Hardy, 'On the Cusp: Epidemiology and Bacteriology at the Local Government Board, 1890–1905', *Medical History*, 1998, *42*, 328–46; Dieter Schott, 'The *Handbuch der Hygiene*: A Manual of Proto-Environmental Science', in V. Berridge and M. Gorsky, *Environment Health and History* (Basingstoke: Palgrave Macmillan, 2012), 69–93.

[69] *Romford Times*, 'Dagenham Smells', 27 July 1927, p. 4.

[70] *Romford Times*, July 25 1928, p. 3, 'Resentful Rainham, "Smells worse than ever"'.

[71] Michael Worboys, 'Was there a Bacteriological Revolution in Late Nineteenth-century Medicine?', *Studies in History and Philosophy of Biological and Biomedical Sciences*, 2007, *38*, 20–42.

[72] John F. M. Clark, *Bugs and the Victorians* (New Haven: Yale University Press, 2009), 216.

[73] Clark, *Bugs*, 231–2.

[74] *Ibid.*, 232.

population was a constant source of fear, both as an implied vector of disease, but also as a concern with the wider ecological impact of refuse tips.

The consciousness of a wider ecological impact of tipping points towards the co-existence of popular discourses of risk alongside, and integrated into, expert knowledge. Sometimes this included the reported presence at tips of 'plagues' of crickets, weeds and other pests generally.[75] Similarly fears about the pollution of water courses pointed towards worries about the wider environmental impact of tipping. Such wider concerns were rarely central to medical discourse, but they were commonly reported and need to be taken account of. Knowledge of risk did not emerge simply from the internal disputes between sanitary and bacteriological approaches to public medicine, but also took account of wider cultural fears. The co-existence of risks with different epistemic foundations exemplifies the inter-textual character of risk discourse in the field of everyday life. Risk was a contingent ensemble of discourses within a semantic field that could be produced, contested, deconstructed and reassembled. It is this wider field in which scientific knowledge operated that would make risk discourse subject to appropriation by counter-hegemonic forces.

Simultaneously, the medical discourse of refuse disposal involved a reflexive bifurcation between the environmental approaches of sanitary medicine and the bacteriological accounts of the new laboratory medicine. This may seem superficially similar to Beck's account of the operation of scientific knowledge in the risk society. However, the presence of this antinomy needs to be understood in the context of the reproduction of urban space indicated above. Sanitary science did not simply disappear with the 'rise' of bacteriology, but as we have seen here was being incorporated into a new discourse of risk.[76] Sanitary science and the new bacteriology could act both to reproduce and to negate one another, but whether this happened was contingent upon the ideological positioning of the actors deploying these frameworks and the wider social and economic relations within which discourses of risk were embedded.

Controlled Tipping and the Contestation of Risk

Controlled tipping emerged between the wars as a way of reconciling the needs of urban areas with the necessity of exposing the suburban fringe to urban refuse. It was a means of mitigating the risks of tipping while reproducing urban space and the waste regime on which it depended.[77] Yet, controlled tipping was a controversial technological fix that remained contested throughout the twentieth century, particularly in those localities in which dumps were sited. The contestation of controlled tipping did not emerge in the way Beck suggests should occur in risk society, that is from the reflexive scientific demonstration of controlled tipping to be inadequate to the task it had been set. Instead, contestation emerged from within the *already* contradictory framing of risk discourse within

[75] *The Times*, 9 September 1932, 5f; *The Times*, 15 October 1929, 19f.

[76] Simon Szreter, 'The Importance of Social Intervention in Britain's Mortality Decline, 1850–1914. A Reinterpretation of the Role of Public Health', *Social History of Medicine*, 1988, *1*, 1–32; Michael Worboys, *Spreading Germs: Diseases, Theories and Medical Practice in Britain, 1850–1900* (Cambridge: Cambridge University Press, 2000); Anne Hardy, *The Epidemic Streets: Infectious Disease and the Rise of Preventive Medicine* (Oxford: Clarendon Press, 1993).

[77] Cooper, 'Burying', 1035–39; Gandy, *Recycling and Waste*, 72–3.

everyday life. This discourse was complex, inter-textual and open to contradiction, contestation and transformation.

Following the creation of the Ministry of Health after the First World War, the attention given to urban waste disposal by central government greatly increased.[78] While a good deal of attention had been paid to the issue in the pre-war era, much critical decision making had been largely left in the hands of local and municipal authorities, particularly when it came to questions of technological choices regarding disposal.[79] It was to municipalities that the boosters of such innovations as the 'dust-destructor' spoke in their literature.[80] After the First World War, the Ministry of Health appears to have increased the direct monitoring and survey of local activities, and intervened in behind-the-scenes discussions about the most appropriate systems of disposal. It became the agency most directly involved in negotiating between the interests of different localities, and was in the strongest position regarding expertise to decide questions regarding appropriate technological solutions. As an instance of this centralisation, in 1922, it issued a circular giving technical advice on basic standards for a system of 'controlled' refuse tipping, including standards for the depth of the tipping face; the depth of covering material; the length of time refuse on a dump-site could be left exposed, and instructions regarding the proper control of smells and pests. This 'Ministry circular' became the official basis of 'controlled tipping', and was widely adopted as the basis of Metropolitan Boroughs' contracts with private contractors.

Bacteriology quickly came to play a central role in the legitimisation of controlled tipping as a 'new' technology, and its legitimation as risk free. Advocates of controlled tipping built their claims for the superiority of controlled tipping around the epistemic claim that biological sciences had rendered epidemiological conceptions of disease redundant. One of the leading authors of professional manuals on waste disposal of the period, A. L. Thompson, excoriated opponents of controlled tipping for clinging to an 'obsolete etiology'. He argued that incineration was the most sanitary method of dealing with refuse 'because of the protection it is supposed to afford against hypothetical epidemics'.[81] He claimed that reliance on only one method of disposal was outdated and that even 'separation, or utilisation', had 'come under the lash of those who, for the sake of public hygiene, would make complete incineration compulsory'.[82] Thompson conceded that, 'we cannot justify fly-breeding, rat harbouring, nuisance-creating tips, but we can advocate and defend, offence-free schemes of land reclamation by means of town refuse, because the principle of economically restoring waste ground to usefulness is a sound one. So too, is the disposal of refuse in the cheapest manner consistent with environmental hygiene'[83] He went on:

> Although controlled tipping as a method of efficient refuse disposal is not quite new, it is only comparatively recently that it has been lifted into the prominence that we

[78]'Ten Years of Public Cleansing in Great Britain', *Municipal Journal and Public Works Engineer*, 24 July 1931, pp. 1135–47.

[79]On the local politics of disposal see, Clark, 'Incineration', 260–2.

[80]W. F. Goodrich, *The Economic Disposal of Town's Refuse* (London, 1901).

[81]A. L. Thompson, *Disposal of House and Trade Refuse. The Biology of Controlled Tipping and Other Matters* (London: Institute of Public Cleansing, 1933), 9.

[82]*Ibid.*, 11.

[83]*Ibid.*

> now find it. It has had and still has, though in diminishing numbers, its critics. Medical officers and others, who are concerned more primarily with the hygienic side of local government administration than the strictly economic, required to be convinced that the method carried no detrimentalities with it.[84]

For advocates of controlled tipping the discourse of risk became a struggle between old and new, superior and inferior, knowledges. The objective was to render controlled tipping the perfect means of reconciling the contradictory needs of urban reproduction and suburban health. By claiming that bacteriology could render tipping safe, advocates of controlled tipping sought to neutralise the everyday operation of sanitary discourse. However, the inter-textuality of the semantic field in which risk was produced was to prove resistant to such challenges.

Controlled tipping emerged as an attempt to reconcile the particular competing interests of spatially distinct communities while, at a general level, securing the reproduction of urban social life. It was an attempt to legitimise the return to a form of disposal that medical and professional discourse had previously worked hard to delegitimise. It is an example of a technological fix that materialised an attempt to smooth over contradictions at both the levels of social relations and scientific discourse.[85] The reconciliation of these contradictions was, however, far from straightforward. The bacteriological legitimation of controlled tipping was forced to enter an existing semantic field of everyday understandings of the risks of refuse disposal. The subsequent contestation of controlled tipping reveals the extent to which risk discourse was contingent upon this pre-existing field.

For example, the claim that controlled tipping would be more economic than existing systems of incineration was contested by appropriating the discourse of risk. This occurred in arguments that followed the Salford Corporation's proposal to adopt controlled tipping in the 1930s. In Salford, arguments for technological change were explicitly driven by the search for economies. A report by the Corporation's Economy Sub-Committee found that controlled tipping would save £13,000 per annum over incineration, and drew on the example of Bradford Corporation's successful pioneering of the practice.[86] On the basis of the Ministry of Health's annual report, *Public Cleansing*, the Sub-Committee reported that 'where the method of disposal is by means of incineration the cost is high, whereas the cost of disposal by controlled tipping is comparatively low', and observed that a visit to Bradford's controlled tips had demonstrated that there was 'no danger to the health of the community ensued from the adoption of controlled tipping'.[87] However, there were significant divisions within the Corporation over the risks of tipping. Councillor Milward attacked the report's conclusions because 'no regard had been paid the question of true economy which dealt with the health of the citizens of Salford'.[88] Councillor Webb similarly argued that controlled tipping

[84]B. Jones and F. Owen, *Some Notes on Scientific Aspects of Controlled Tipping* (Manchester: Manchester City Corporation, 1936), 1.

[85]Lisa Rosner (ed.), *The Technological Fix: How People Use Technology to Create and Solve Problems* (Routledge: Oxford, 2004).

[86]*Salford City Reporter*, 29 April 1932; *Manchester Guardian*, 14 September 1932.

[87]*Ibid.*

[88]*Salford City Reporter*, Friday 6 May 1932.

could only be regarded as an interim solution; the Corporation covered only 5,000 acres and 'if they used up the whole of the available land in the city for tipping, at the end of the period they would have to go back to incineration'.[89] Furthermore, 'a certain amount of material should always be destroyed by incineration'.[90] Responding to such fears the proponents of tipping proceeded to deploy the legitimating power of 'objectivist' science. The Salford Cleansing Department conducted a series of public experiments at its Stott Lane tip in Pendleton that were designed to reassure the public.[91] The *Salford City Reporter* reported in terms designed to highlight the mitigation and elimination of risk: 'The controlled tipping now in progress at Stott lane has been experimented with for a matter of about three months. … Elaborate precautions are taken against vermin and bacteria, the workers being instructed that all holes must be sealed up, thus obviating the possibility of vermin'.[92] By the end of September 1932, the subcommittee were, on the basis of this three-month experiment, pushing for universal adoption of controlled tipping by the Corporation and, to the obvious concern of residents, its deployment on local playing fields and allotments to level the land.[93]

Suspicion of the new techniques continued to activate opposition, however. Within a year of completing its experiments, the Salford Corporation was receiving complaints that 'offensive smells were coming from the new tip at Wallness, and that rats were breeding there in the vicinity.'[94] Local property-owners were calling for compensation for the effect on property values and parents were 'blaming the controlled tip for fever and diphtheria cases in the neighbourhood'.[95] The council asked its Medical Officer of Health to investigate, who found no evidence of flies or rats and declared that the possibility of infection was 'scarcely within the bounds of possibility'.[96] Alderman Higginbottom declared this an 'emphatic contradiction of the insanitary effects of the controlled tips'.[97] Salford's citizens were, however, far from satisfied. In December 1933, the *Salford City Reporter* carried a letter from one resident that argued vehemently against controlled tipping both as an economy measure and for its environmental health effects.

> This controlled tipping is supposed to be an economy measure, but is it? The economy men of the Salford Council are going to find the rates have not benefited to the extent that they expected, and the menace of infection and contagion is very real. In my opinion, municipalities who have adopted this scheme have reverted back to Eastern practices of dumping their rubbish on the roadside for two and four-legged animals to scavenge amongst.[98]

[89] *Ibid*.
[90] *Ibid*.
[91] *Manchester Guardian*, 4 January 1933. A similar strategy was later deployed by the Manchester City Corporation and backed by the city's public health laboratory. The results were published as B. Jones and F. Owen, *Some Notes on the Scientific Aspects of Controlled Tipping* (Manchester: City of Manchester Corporation, 1936). The use of bacteriology and laboratory science in the development of waste disposal systems had already been established in the treatment of sewage. See, Christopher Hamlin, 'William Dibdin and The Idea of Biological Sewage Treatment', *Technology and Culture*, 1988, *29*, 189–218.
[92] *Salford City Reporter*, Friday 16 September 1932.
[93] *Salford City Reporter*, Friday 7 October 1932.
[94] *Salford City Reporter*, Friday 15 September 1933.
[95] *Ibid*.
[96] *Salford City Reporter*, 22 September 1933.
[97] *Manchester Guardian*, 22 September 1933.
[98] *Salford City Reporter*, Friday 15 December 1933.

This response is indicative of the limits of seeing scientific knowledge production in isolation from the wider semantic field of everyday life. It was remarkably difficult, even with the backing of laboratory science, to establish a consensus on the risks of refuse disposal. Sanitary and environmental conceptions of risk remained active. Moreover, these were combined with other discourses. In this case the idea that controlled tipping was akin to the uncivilised, oriental practices of the 'East', the antithesis of modernity. If risk society is characterised by expert monopolisation of the right to decide acceptable risk, how can it take account of these contradictory popular conceptions of risk?

In 1934, the Conservative Member of Parliament, Sir Cooper Rawson, sparked a public spat between proponents of controlled tipping and those who continued to claim that incineration was best way of dealing with domestic refuse. The argument, carried on in *The Times* newspaper, illustrates both the growing controversy surrounding refuse disposal in this period, and the difficulty facing attempts to legitimise controlled tipping. Rawson's involvement is of interest precisely because he was willing to openly contest the *right* of 'expert' biologists and public cleansing superintendents to decide upon acceptable risk. Writing to *The Times* in December 1934 on the theme of 'Controlled Tipping or Incineration', Rawson observed that:

> It is strange in this scientific age that a committee which has been considering the disposal of London's refuse can suggest no better way of dealing with it than 'dumping'. The London Cleansing Advisory Committee, states in its interim report that 'controlled tipping is in general to be preferred to incineration'. In other words, the committee advocates the continuation of the existing insanitary dumps, for controlled tipping is merely a polite name for dumping.[99]

The idea of controlled tipping Rawson argued, was perhaps acceptable in principle, but in practice there could be no guarantee that the conditions laid down by the Ministry of Health's 1922 circular could be either properly met or publicly verified. The real world was more complex than the laboratory science of bacteriology suggested. Controlled tipping may be risk free in principle, but the everyday practice was a very different question. Only incineration could 'safeguard the population against the risks of disease'.[100]

Rawson's claims were met with the ire, and confusion, of a growing body of enthusiasts for controlled tipping among local authorities. The chairman of the London Cleansing Advisory Committee, Reginald Brown, responded to Rawson in *The Times*, and stated that he had conflated 'existing insanitary dumps' which the committee recommended be closed with the system of controlled tipping. In short, Rawson didn't understand the technology. This missed the point as Rawson made clear in a further letter which argued that the LCAC regarded it as a 'presumption' to have any of its conclusions questioned, and as 'heresy to question a policy which has the blessing of the Ministry of Health'.[101] Rawson was able to draw some support from among cleansing professionals who still worked partly within the frame of sanitary medicine. G. Watson a member of the

[99] *The Times*, Wednesday 5 December 1934, 15e.
[100] *Ibid*.
[101] *The Times*, Wednesday 19 December 1934, 10a.

institute of civil engineers, for example, argued that controlled tipping might be appropriate in isolated rural areas, but could hardly be appropriate to the needs of urban refuse disposal.[102] The Medical Officer of Health for South West Kent expressed similar scepticism regarding the claims of 'so-called "controlled" tipping'.[103] In spatial terms, he argued, refuse dumping was simply a case of moving a problem from one place to another and in any case 'some medical officers of health look upon it as indefensible from the point of view of the protection of the health of the public'.[104] It was also a seemingly irresolvable problem. As the Chairman of Romford Council remarked in 1928, it was impossible to move refuse tips every time new houses were built as they would eventually run out of space.[105] The idea that the country was running out of space for its refuse would continue to trouble controlled tipping throughout the rest of the century.

Conclusion: Risk and the Political Ecology of Everyday Life

For all the efforts made to legitimate it, controlled tipping remained a controversial technology. Its failure to finally reconcile the requirements of urban reproduction with public health and the wider environment is in part (along with a complex range of other issues) at the root of the present-day displacement of landfill as the technology of choice in refuse disposal.[106] Today experts and government seek to legitimate incineration as the most environmentally friendly and lowest risk option for dealing with urban wastes, and again they find themselves widely under attack from a whole host of organised grassroots anti-incineration movements.[107] If anything, the politics of risk associated with refuse disposal is better organised than ever before, and there is even greater scepticism about expert accounts of the environmental impact of refuse disposal technologies.

In this article we have sought to critique Beck's articulation of the 'risk society' on the basis of a detailed empirical engagement with his analytical claims rather than engaging in a chronological critique. We have done this because we feel that, while they provide a crucial historical context, those critiques that focus on the chronological claims for risk society fail to fully engage with, or revise, the fundamentals of Beck's theoretical contribution, which are to be found in its conceptual apparatus. We would not claim that we have demonstrated that these claims are 'wrong', which in a short empirical article of this kind would be impossible in any case. Beck's development of the risk society concept is too rich simply to collapse because it does not fit a single, very particular historical example. Rather we have sought to test its limits in a particular historical context. As a minimum we would claim that there is little evidence so far that would support pushing the risk society back into the early twentieth century, let alone the nineteenth century as has been suggested, and that our example argues against doing so.

However, we do think that there are grounds to go beyond this minimal conclusion, or, at least to suggest that it is possible to enrich the risk society thesis. For instance, we have argued that the example of inter-war refuse disposal raises questions about the adequacy

[102] *The Times*, Monday 24 December 1934, 6b.
[103] *Ibid*.
[104] *Ibid*.
[105] *Romford Times,* 29 August 1928, p. 1.
[106] Josh Reno, 'Managing the Experiences of Evidence: England's Experimental Waste Technologies and their Immodest Witnesses', *Science, Technology and Human Values*, 2011, *36*, 842–63.
[107] See for example St Dennis Anti-Incinerator Group, <www.st-ig.co.uk> (accessed, 09 August 2012).

of the concept of 'individuation'. Public comprehension of the risks associated with refuse tipping does not appear to suggest that these were articulated or perceived as individuated, even though the example we have used was not a workplace hazard, but a much more general public risk that might be assumed to better fit the model of a 'democratic risk'. Indeed, it is clear that the risks of tipping were articulated through senses of place and community that included, but were not limited to, class identities.

Moreover, we have argued that any account of the politics of risk should engage with the politics of space and the capitalist demands of urban reproduction. We have suggested that there was a political ecology at work in the siting of refuse disposal facilities such as controlled tips in which the requirements of urban reproduction were privileged. It was this privileging of urban space that was contested by those communities affected by refuse disposal. Class is not the only way in which the exploitative demands of capitalist accumulation is expressed, and this only becomes apparent when activities such as waste disposal are viewed from the perspective of the everyday. The political ecology of risk remained ultimately rooted in the social relations of urban capitalism and the processes, political and economic, of their daily reproduction.

We would agree with Sellers and Melling who have recently argued that the 'ready equations of knowledge with power like Foucault's' are inadequate to explaining the actual political operation of risk.[108] When thinking about the role of medicine and science in the production of knowledge of risks, we would argue that this should not be interpreted as an isolated discourse driven by immanent processes of the kind suggested by Beck's account of 'reflexive modernisation'. Rather we wish to see medical discourses and their material manifestations in technologies (controlled tipping) in the context of the ensemble of social relations, material practice and ideology. Only in this context do the unerring efforts made by experts and political elites to reconcile the political economy of a privileged urban space with the complex demands of the semantic field of the everyday make sense. It was far from easy for experts to impose a monopolistic vision of risk and its mitigation. Indeed, it was precisely through the antinomies generated through the everyday that it was possible to contest and modify scientific knowledge production. Rather than a process of the immanent self-transcendence of medico-scientific claims, we see an active contestation of those claims between hegemonic and counter-hegemonic forces within the semantic field of the everyday. Indeed, we suggest that attention to the conceptual apparatus of the everyday is one way in which it may be possible to move ahead in understanding the complex and unstable relations between professional and quotidian knowledge.

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[108]Sellers and Melling, 'Towards an industrial hazard history', 422.